# Bridges and Structures

## Sponsor Responsibilities

### Precast Bridges on Pile Foundations

Bridges utilizing the Department's Precast Standards and pile bent construction shall be designed in accordance with ALDOT Guideline for Operation (GFO) 3-70. GFO 3-70 provides guidance for general design requirements, foundation investigation requirements, minimum pile size, pile driving requirements, and test pile and load test requirements for this type structure. A copy of GFO 3-70 can be downloaded from the ALDOT Design Bureau web page.

### Structures other than Precast Bridges

All other structures shall be designed using Allowable Stress Design methods following the 17th Edition of the AASHTO Standard Specifications for Highway Bridges and latest interims and the ALDOT Structures Design Manual. A copy of this manual can be downloaded from the ALDOT Bridge Bureau web page.

Bridge plans shall be prepared following the Bridge Plans Detailing Manual (BPCL-ATRIP Program.doc) dated May 18, 2012. A copy of this manual can be downloaded from the ALDOT Bridge Bureau web page.

Additional guidance follows for bridge designs and plans being submitted for ATRIP:

- The Sponsor or their representative/design consultant (*sponsor*) shall work through the Division office in transmitting bridge designs/plans or other bridge related information for review by the Bridge Bureau.
- The Bridge Bureau will coordinate directly with the lead Division in providing review comments to be addressed by the *sponsor* until plans are of a quality suitable for a Construction Bureau review.
- Bridge layout(s) shall be reviewed/accepted by the Bridge Engineer prior to commencement of design work.
- The following information will need to be submitted by the *sponsor* in order for the Bridge Bureau to conduct a review of the design and bridge project drawings:
    - Roadway title sheet
    - Typical roadway section sheet
    - Plan / profile sheet(s)
    - Ground line (3-line profile) data. Offsets for collecting ground line profile shall be at centerline of bridge and at offsets left and right of centerline of proposed replacement structure so as to represent natural ground
    - Profile and typical section of the feature to be crossed if grade separation
    - Utility sheet with existing utilities identified if utilities are not to be relocated and existing locations could potentially impact construction of proposed bridge
    - One (1) copy of the hydraulic report and hydraulic recommendations stamped by a registered professional engineer for the State of Alabama

- One (1) copy of the foundation report, boring logs and recommendations stamped by a registered professional engineer for the State of Alabama
- Two (2) ½ scale paper print sets of the completed bridge drawings stamped by a registered professional engineer for the State of Alabama
- One (1) copy of design calculations stamped by a registered professional engineer for the State of Alabama
- One (1) copy of the check list portion of ALDOT Bridge Bureau's Bridge Plans Detailing Manual per bridge design completed, line item initialed by the Sponsor's consultant indicating that bridge plans have been prepared by and reviewed in accordance with this document

- Once all review comments have been addressed to the satisfaction of the Bridge Engineer, the Bridge Bureau will provide a signed paper copy (or pdf) of bridge plans to the lead Division for their use in assembling the Construction Bureau plan submittal.
- Review of *sponsor* designs will be delegated to the Bridge Bureau's four design sections or an assigned on-call design services (OCDS) review consultant. If review of *sponsor* design is performed by one of the Bridge Bureau's OCDS review consultants, then the Bridge Bureau will coordinate directly with the review consultant and then return comments to the lead Division for resolution as outlined above.
- The Bridge Bureau's review (including review by an OCDS consultant) will be one of Quality Assurance (QA); however, this QA review does not waive the design consultant's responsibility to perform their own independent QA review. It is expected that consultants preparing design/plans for ATRIP projects have the required design and plan preparation experience necessary to prepare designs/plans of a quality suitable for letting.
- It is assumed that each consultant preparing design/plans for ATRIP projects has a written Quality Control and Quality Assurance plan established for reviewing their own work that insures a quality final product is delivered to ALDOT and that their QC/QA plan is being followed in performing design services for the various counties and municipalities. Definitions of Quality Control and Quality Assurance are provided below:
    - Quality Control (QC): Procedures of checking the accuracy of the calculations and consistency of the drawings, detecting and correcting design omissions and errors before the design plans are finalized, and verifying the specifications for the load-carrying members are adequate for the service and operation loads.
    - Quality Assurance (QA): Procedures of reviewing the work to ensure the quality control procedures are being followed and are effectively preventing mistakes, and providing consistency in the development of bridge design plans and specifications.
- The consultant shall be responsible for performing a structural validation of the designed superstructure through bridge rating analysis, using the applicable AASHTO Rating Code and select rating vehicle loads. This validation shall be performed and submitted prior to project construction letting.

# Bridge Bureau Responsibilities

In addition to performing a Quality Assurance review of *sponsor* design and plans, the Bridge Bureau will also perform the following tasks:

- The Bridge Bureau will be responsible for requesting the foundation investigation if the Sponsor elects to have the geotechnical investigation and report performed by the ALDOT Materials and Tests Bureau.
- The Bridge Bureau will be responsible for coordination of projects that involve bridges over Railroads. This coordination with the Modal Programs Bureau will be the responsibility of the assigned Section Supervisor. This coordination should occur as soon as the bridge layout has been accepted for final design.
- The Bridge Bureau will be responsible for coordination of projects that involve bridges over navigable waterway. This coordination with the FHWA and U.S. Coast Guard will be the responsibility of the assigned Section Supervisor. This coordination should occur as soon as the bridge layout is accepted for final design.
- NOTE: The *sponsor* will be responsible for preparing the bridge permit drawing for ALDOT's use in submitting to the FHWA and USCG.

# Construction Activities

Once a project has been let to contract, the policies that follow will be used to promote consistency and clarity in addressing construction activities and concerns:

- Fabrication drawings for prestressed girders, steel girders, bearings, etc. will be submitted in accordance to the ALDOT Construction Specifications. The Bridge Bureau will forward the fabrication drawings to the Designer of Record for review/approval. Approved drawings will be returned to the Bridge Bureau for distribution.
- Construction related issues (changed conditions / construction errors, etc.) received by the Bridge Bureau from the ALDOT Construction Engineer will be forwarded to the designer of record for resolution. The Designer of Record will respond directly to the ALDOT Bridge Bureau with resolution. The Bridge Bureau will transmit recommended resolution to Construction Engineer for their use in forwarding to the project engineer.
- The Designer of Record may be required to visit the project site as necessary and/or as needed to assist in resolving construction related issues and concerns.